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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,339	02/12/2004	Yasuo Shimomura	1417-452	1772

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NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER
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KOSLOW, CAROL M

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/776,339

Applicant(s)

SHIMOMURA ET AL.

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____.  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/11/05:9/3/04</u> .   | 6) <input type="checkbox"/> Other: ____.                                    |

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The Japanese references cited in the information disclosure statement of 3 September 2004 have been considered with respect to the provided English abstracts and/or partial translations.

Claim 16 is objected to because of the following informalities: The formula  $(x+y) \geq 0.6$  is unnecessary and could create confusion in the interpretation of the claim. The formula should be deleted. Appropriate correction is required.

Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The wording of the claim makes it unclear if the "two or more kinds of phosphors" includes the phosphor of claim 18 or are present in addition to the phosphor of claim 18.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-11 and 15-17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. patent 3,468,801.

This patent teaches in example V and in column 3, lines 16-23, samarium or europium doped grossularite crystals for use as laser crystals. Laser crystals are a type of phosphor. Grossularite has the formula  $\text{Ca}_3\text{Al}_2\text{Si}_3\text{O}_{12}$ . The amount of samarium or europium doping is

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about 1 mol%, as taught in example V, or 0.01 mol based on the formula weight of grossularite.

The reference clearly teaches the claimed phosphor and therefore must inherently have a brightness and a sum of color coordinates x and y that fall within the ranges of claims 16 and 17, absent any showing to the contrary. With respect to claims 7-9, there is no requirement in these claims or in claim 1 that the listed tetravalent elements other than Si must be present, which means these claims and claim 1 teach  $M^{3+}$  can be represented by  $(Si_{1-x}M^{3+}_x)$ , where  $0 \leq x < 1$  and  $M^{3+}$  are the elements in claims 7-9. The reference teaches examples where x is 0. The reference clearly teaches the claimed phosphor.

Claims 1-13, 15-20 and 22 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. patent application publication 2005/0093442.

This reference teaches a light emitting device comprising a semiconductor light emitting element and a wavelength conversion material comprising at least two phosphors where one of them has the formula  $Ca_3Sc_2Si_3O_{12}:0.03 \text{ mol Ce}$  or  $CaMg_2Lu_2Si_2GeO_{12}:0.06 \text{ mol Ce}$ . This device clearly reads upon that of claim 18 and the phosphor falls within the formula of claims 13 and 15. Therefore the taught device must inherently have a  $R_a$  and  $R_s$  that falls within that claimed and the phosphor must inherently have a brightness and a sum of color coordinates x and y that fall within the ranges of claims 16 and 17, absent any showing to the contrary. The reference clearly teaches using the taught device as a lamp or as part of a lighting system. The reference clearly teaches the claimed phosphor, device and system.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 4,093,890.

This reference teaches a phosphor having the formula  $\text{Ln}_{3-x-p}\text{Tb}_p\text{A}_{5-x-2y}\text{Me}^{\text{II}}_{x+y}\text{Me}^{\text{IV}}_{x+y}\text{O}_{12}$ , where x is 0-2.8, y is 0-2, x+y is 0.4-2.8, p is 0.02-1.5,  $x+p \leq 3$ , Ln is at least one of Y, Lu and Gd, A is Al and/or Ga,  $\text{Me}^{\text{II}}$  is at least one of Mg, Ca, Sr and Zn and  $\text{Me}^{\text{IV}}$  is at least one of Si, Ge and Zr and preferably  $\text{Me}^{\text{IV}}$  is mainly Si. The values in this formula overlap the claimed formula values. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The reference suggests a phosphor having the formula of  $\text{Tb}_p\text{A}_{2.2}\text{Me}^{\text{II}}_{2.8}\text{Me}^{\text{IV}}_{2.8}\text{O}_{12}$ , where y is 0, x is 2.8, p is 0.02-1.5, A is Al and/or Ga,  $\text{Me}^{\text{II}}$  is at least one of Mg, Ca, Sr and Zn and  $\text{Me}^{\text{IV}}$  is at least one of Si, Ge and Zr and preferably  $\text{Me}^{\text{IV}}$  is mainly Si. Since the taught formula overlaps that claimed, one of ordinary skill in the art would expect the taught phosphor to have a brightness range and a sum of color coordinates x and y range that overlap the ranges of claims 16 and 17, absent any showing to the contrary. The reference suggests the claimed phosphor.

Claims 1-10 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-291799.

The abstracts for this reference teaches a phosphor having the formula  $\text{Y}_{3-x}\text{Ca}_x\text{Al}_5\text{Si}_x\text{O}_{12}$ , where x is 0.1-3.0 and which contains Cr and Nd as the luminescent centers. Paragraph [0017] and the examples teach the amount of Cr and Nd, individually, is 0.001-0.01 mol. The

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formula and amounts of Cr and Nd overlap the claimed ranges. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). Since the taught formula overlaps that claimed, one of ordinary skill in the art would expect the taught phosphor to have a brightness range and a sum of color coordinates x and y range that overlap the ranges of claims 16 and 17, absent any showing to the contrary. The reference suggests the claimed phosphor.

Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent application publication 2005/0093442.

As stated above, this reference teaches the claims light emitting device. paragraph [0003] teaches such devices are conventionally used in displays as a light. Accordingly, one of ordinary skill in the art would have found it obvious to use the taught device in a display as a light source. This reference also teaches the phosphor in the taught device can have the formula  $(RE_{1-x}Sc_x)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+d}:2yCe$ , where Re is Y or a lanthanide other cerium, A is Mg, Ca, Sr or Ba, B is Mg or Zn, p is 0-3, q is 0-3, z is 2.5-3.5,  $0 \leq x < 1$ ,  $0 < y \leq 0.3$  and  $-1.5 \leq d \leq 1.5$ . The taught values overlap the claimed values and the taught elemental composition suggests the claimed elemental composition. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). Thus the reference suggests phosphors having the formula  $(Lu_{1-x}Sc_x)_2Ca_{3-p}Mg_pSi_{z-q}Ge_qO_{12+d}:2yCe$ , p is 0-3, q is 0-3, z is 2.5-3.5,  $0 \leq x < 1$ ,  $0 <$

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$y \leq 0.3$  and  $-1.5 \leq d \leq 1.5$ . The taught values overlap the claimed values. One of ordinary skill in the art would have found it obvious to use the this suggested device in the taught uses of a light source in a display or a lighting system.

This reference also teaches the phosphor in the taught device can have the formula  $(Ca_{1-x-y}Sr_xBa_y)_3(Sc_{1-a-c}Lu_aD_c)_2Si_{n-w}Ge_wO_{12+d}:3zCe$ , where D is Mg or Zn, a is 0-1, c is 0-1, n is 2.5-3.5, w is 0-3, y is 0-1,  $0 \leq x < 1$ ,  $0 < z \leq 0.3$  and  $-1.5 \leq d \leq 1.5$ . {It is clear that the subscript b in 1-a-b is a typographical error and that it should be c} The taught values overlap the claimed values and the taught elemental composition suggests the claimed elemental composition. Thus the reference suggests phosphors having the formula  $(Ca_{1-x-y}Sr_xBa_y)_3(Sc_{1-a}Lu_a)_2Si_{n-w}Ge_wO_{12+d}:3zCe$ , where a is 0-1, n is 2.5-3.5, w is 0-3, y is 0-1,  $0 \leq x < 1$ ,  $0 < z \leq 0.3$  and  $-1.5 \leq d \leq 1.5$ . The taught values overlap the claimed values. One of ordinary skill in the art would have found it obvious to use the this suggested device in the taught uses of a light source in a display or a lighting system. The reference suggests the claimed phosphor, device, display and lighting system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

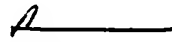
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk  
January 3, 2006

  
C. Melissa Koslow  
Primary Examiner  
Tech. Center 1700